

**Commonwealth of Kentucky**  
**Division for Air Quality**  
***PERMIT STATEMENT OF BASIS***

DRAFT

Conditional Major / Synthetic Minor, Operating

Permit: F-07-017

Ensign-Bickford Aerospace & Defense Company

Graham, KY 42344

July 19, 2007

Min Wang, Reviewer

SOURCE ID: 21-177-00079

SOURCE A.I. #: 40689

ACTIVITY ID: APE20070001

**SOURCE DESCRIPTION:**

Ensign-Bickford Aerospace & Defense Company (EBA&D) is a manufacturer of explosive products serving both the Aerospace & Defense industries. The Graham, KY facility manufactures cast-cure products via mixing and blending processes for military applications, extruded plastic bonded explosive for both military and commercial markets, as well as demolition and mine breaching systems. The Multiple Reaction Facility (MRF) at this facility utilizes chemical processes such as dissolution/recrystallization, vacuum stripping, and other chemical batch processes to create products such as Ultrafine RDX, MAPO and GAP.

In December 1998, a Conditional Major permit application was submitted on behalf of The Ensign-Bickford Company for the facility located at State Route 175, Graham, KY. On December 31, 2000, The Ensign-Bickford Company (EBCo) split into two companies: (1) The Ensign-Bickford Company, and (2) Ensign Bickford Aerospace & Defense Company. Both of these companies were subsidiaries of the parent company, Ensign-Bickford Industries, Inc. During May 2003, The Ensign-Bickford Company merged with Dyno Nobel, Inc., and the Graham, KY assets of The Ensign-Bickford Company were acquired by Dyno Nobel Inc.

To account for the aforementioned changes in company ownership, a revised Title V Permit application was submitted to the Division in April 2003. The revised application separated the emission sources contained in the 1998 application into EBA&D emission sources and Dyno Nobel, Inc. emission sources (previously EBCo sources). In February 2007, a new application was submitted to the Division that contained only Ensign-Bickford Aerospace & Defense Company emission facilities, and this application is the subject of this permit review. Equipment and pollutant emitting activities attributable to Dyno Nobel have been reviewed and approved by the Division under a separate permit to operate.

In their revised application dated February 2007, EBA&D indicated that the multiple reaction facility (MRF) and equipment described in construction permit C-91-165 will continue to be used; however, EBA&D will no longer manufacture tetranitrocarbazole (TNC) or nitro triazone (NTO). Thus, operating limitations and monitoring/recordkeeping requirements associated with NTO and TNC are not included in this permit. Further, under operating permit F-98-006 (Revision 2), emissions from the glycidyl azide polymer (GAP) process consisted of xylene, a hazardous air pollutant (HAP). In a letter to the Division dated November 22, 2002, EBA&D made notice of a formulation change to the GAP process. Specifically, isobutyl isobutyrate (IBIB) which is not a HAP has replaced xylene as the carrier solvent in the GAP formulation. Therefore, prior operating

and emission limitations pertaining to xylene are not included in this permit.

EBA&D has requested voluntary regulated pollutant emission limitations for this approval to be issued as a Conditional Major permit pursuant to 401 KAR 52:030. This permit is issued as the initial Conditional Major permit for this source.

**COMMENTS:**

**Type of control and efficiency:**

**EP 10 (17)** – Emissions from the MAPO process (permit S-96-025) consist of methylene chloride and propyleneimine, both regulated Hazardous Air Pollutants (HAPs). Methylene chloride, the only HAP emitted in significant quantities, is emitted from the batch reactor, two storage tanks, two boil tanks, and fugitive leaks from transfer equipment. Emissions are reduced by operation of a condenser to recover at least 80% of the methylene chloride.

**EP 10 (25)** – Emissions from the reaction process are controlled by a condenser that reduces IBIB emissions by a minimum of 88%.

**Emission factors and their source:**

Tank emissions were calculated using US EPA TANKS V. 4.09 for emission points 11, 08 and 09. EP 10 (17) (MAPO production) and EP 10 (25) (GAP-1 and GAP-2) emission calculations are based on material balance. Emission calculations for EP 13 MRF Heat Exchanger # 1 are based on AP-42 emission factors for natural gas combustion.

**Applicable regulations:**

401 KAR 63:020, Potentially Hazardous Matter or Toxic Substances, applies to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division for Air Quality. This rule applies to emission points EP 10 (17), 10 (25), 08, 09, and 11. (Modeling was conducted in association with the MAPO permit application dated October 1995.)

401 KAR 59:015, *New Indirect Heat Exchangers*, particulate matter and sulfur dioxide emissions limitations apply to affected facilities with a capacity of 250 million Btu/hr heat input or less and greater than one (1) million Btu/hr, and constructed after April 9, 1972. This rule applies to emission point 13, heat input capacity of 5 MMBtu/hr.

**Non-applicable regulations:**

401 KAR 61:175, *Leaks from Existing Synthetic Organic Chemical and Polymer Manufacturing Equipment*, does not apply because the source was commenced after the classification date of January 5, 1981.

40 CFR 60, Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984*, does not apply to any of the volatile organic storage vessels at the plant since the storage capacity of each of these vessels is less than 75 m<sup>3</sup> (19,813 gallons).

40 CFR 60, Subpart III, *Standard for Performance for Volatile Organic Compound (VOC) Emissions From the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Air Oxidation Unit Processes*, does not apply since the plant does not produce any of the chemicals listed under 40 CFR 60.617.

40 CFR 60, Subpart NNN, *Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation*

*Operations*, does not apply since methylene chloride is not an intermediate or a final product of a process unit and the process unit is run as a batch process (40 CFR 60.660(c)(3)).

40 CFR 60, Subpart RRR, *Standards of for Volatile Organic Compound Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes*, does not apply since methylene chloride is not an intermediate or a final product of a process unit and the process unit is run as a batch process (40 CFR 60.700(c)(1)).

40 CFR 60, Subpart VV, *Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry*, does not apply since methylene chloride is not an intermediate or a final product of a process unit.

40 CFR 64, *Compliance Assurance Monitoring (CAM)*, does not apply to any emission unit because this source is being approved to operate under a Conditional Major permit and, pursuant to 40 CFR 64.2(a), the requirements of this rule are applicable only to a source required to obtain a Title V (Part 70 or 71) permit.

#### **EMISSION AND OPERATING CAPS DESCRIPTION:**

##### **VOC and HAP Conditional Major Limitation:**

Ensign Bickford Aerospace & Defense Company has requested voluntary permit emission limits of 9 tons per year (tpy) or less of a single hazardous air pollutant (HAP), 22.5 tpy or less of combined HAPs, and 90 tpy or less of volatile organic compounds (VOC). Compliance with these permit limits shall make the requirements of 401 KAR 52:020, Title V permits, not applicable to this source. Compliance with the VOC limit shall also make this source a synthetic minor source pursuant to 401 KAR 51:017, Prevention of significant deterioration of air quality. Compliance with these permit limits shall also make the requirements for major sources of HAP emissions, as defined at 40 CFR 63.2, not applicable to this source.

#### **CREDIBLE EVIDENCE:**

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.